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STATISTICAL BULLETIN

Metropolitan Life Insurance Co.

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MORTALITY RECORD OF THE FIRST NINE MONTHS OF 1925.

The health record of American and Canadian wage-earners and their families during the first nine months of 1925 has never been equalled during the corresponding period of any past year. This is clearly indicated by the unprecedentedly favorable mortality experience of the more than 16,000,000 Industrial policyholders of the Metropolitan Life Insurance Company. Among the white policyholders, the deathrate of 8.2 per 1,000 may be compared with 9.2 for January to September of 1924; with 8.8 in 1923; 8.4 in 1922; 8.2 in 1921, and 9.8 in 1920. It is true that a rate identical with that of this year was recorded for the same period of 1921; but in that year the Company did not insure infants, whose mortality is higher than in any other age group. The 1925 figure, therefore, shows pronounced improvement over the former minimum. The record for the colored policyholders is not quite so favorable. While improvement is shown over the first nine months of 1924, this year's deathrate to date, is not as good as in 1922 and 1921.

Tuberculosis Deathrate Again Declines.

The most important single item in this very gratifying record is the continued decline in the mortality from tuberculosis. The rate for the white policyholders (81.2 per 100,000) represents a drop of 17.7 per cent. from last year's figure for the same months. A very encouraging decrease was also registered for colored persons.

Improvement in Principal Diseases of Childhood.

Improvement, as compared with prior years, is shown for measles, scarlet fever, whooping cough, and diphtheria. By far the most encouraging decline in this group of diseases is in connection with diphtheria. Not only is the deathrate (10.6 per 100,000) the

lowest ever recorded among the Industrial policyholders for any similar nine month's period, but the rate for the third quarter of 1925 (7.0 per 100,000) is a new minimum for *any* three month's period. These figures are presumptive evidence of the decided response which the diphtheria deathrate has made to two outstanding medical discoveries of the twentieth century: the antitoxin treatment for diphtheria and toxin-antitoxin for immunization against it.

Pneumonia, Other Respiratory Diseases, and Influenza.

The record for pneumonia and the other respiratory conditions is entirely satisfactory, with pronounced reductions over prior years. The decline in the deathrate for bronchopneumonia is particularly significant; for it has been registered despite increased coverage of infants, who die from this disease at a higher rate than obtains for any other age group.

While the influenza deathrate has been running higher than that of 1924, it is still below that of most other recent years. There has been no general prevalence of this disease, in virulent form, during 1925.

Diarrheal Complaints.

The deathrate among white policyholders is substantially the same as that for the same period of last year, and that for the colored shows a slight increase. A stationary rate for diarrheal complaints, like that for bronchopneumonia, really denotes improvement, as we would expect higher mortality in view of the greater coverage of infant lives.

Lower Rates for the "Degenerative" Diseases.

The three leading diseases of this group, organic heart disease, cerebral hemorrhage, and chronic nephritis, have all shown improvement, for both white and colored policyholders, as compared with 1924. The combined deathrate for these three conditions shows a decline of 10.4 per cent. among the whites and 7.8 per cent. among the colored over the rate for the first nine months of last year.

Decline in Mortality from Conditions Associated with Maternity.

One of the most favorable items in the health record is the lower deathrate recorded this year for puerperal diseases. This applies to both white and colored women, and to the two principal diseases, puerperal septicemia and albuminuria, as well as to maternal diseases as a group.

Alcoholism Declines; But Cirrhosis of the Liver and Wood Alcohol Poisonings Increase.

Alcoholism caused 356 deaths during the first nine months of 1925 corresponding to a deathrate of 2.8 per 100,000. This may be compared with 342 deaths, and a rate of 3.2 during the same period of 1924. Deaths from cirrhosis of the liver (most of which are of alcoholic origin) numbered 823, with a deathrate of 6.6 per 100,000, as compared with 673 deaths and a rate of 6.3 during the same period of last year.

Twenty-one deaths were due to poisoning by wood or denatured alcohol, against 13 during the same months of 1924.

Since January 1, 1922, a period of three years and nine months, alcoholism, exclusive of wood and denatured alcohol poisonings, has caused the deaths of 1,528 Industrial policyholders. Of these, 1,514 deaths occurred in the United States and only 14 in Canada.

Deaths Due to Violence.

The deathrate for fatal accidents shows some improvement over the first nine months of 1924. This applies to both the white and colored policyholders. Accidental drownings, in particular, have been much less frequent than in 1924; and as the season of highest mortality from this cause has passed, the record for the year should show definite improvement. The suicide situation is also considerably better than at this time last year. Homicides, on the other hand, have been more frequent among the white policyholders although they have declined somewhat among the colored.

Automobile Fatalities Still on the Increase.

The record during 1925 for automobile fatalities has been extremely disappointing. If these casualties have been increasing in the general populations of the United States and Canada as they have in the Industrial populations of the two countries, the 1925 automobile accident deathrate will again reach a new maximum this year. We again direct attention to our comment on this subject in the September *Bulletin*, which was to the effect that in certain cities vigorously applied safety measures have been effective in reducing the automobile accident deathrate; and that communities which still show increasing casualties of this type would do well to study the measures which have been so successful in other places.

The table on the next page presents the deathrate among white and colored policyholders, respectively, for the first nine months of 1925, 1924 and 1923:

Deathrates per 100,000 Persons Exposed. First Nine Months of 1923, 1924 and 1925 Compared. By Color for Principal Causes of Death. Industrial Department, Metropolitan Life Insurance Company. Premium Paying Business.

Cause of Death	Death rates per 100,000 persons exposed					
	White			Colored		
	Jan.-Sept. 1925	Jan.-Sept. 1924	Jan.-Sept. 1923	Jan.-Sept. 1925	Jan.-Sept. 1924	Jan.-Sept. 1923
All Causes of Death	822.2	924.6	880.0	1,504.2	1,637.3	1,495.2
Typhoid fever	3.1	3.5	4.2	11.4	10.1	10.2
Measles	3.6	10.6	11.6	2.4	6.5	10.3
Scarlet fever	4.1	5.9	5.1	1.2	.9	1.3
Whooping cough	7.3	8.2	7.3	13.9	14.7	11.9
Diphtheria and croup	10.6	15.3	15.5	4.3	5.0	5.0
Influenza	20.3	15.6	32.9	49.7	42.3	69.6
Meningococcus meningitis	.9	.8	.8	.6	.9	.5
Tuberculosis—all forms	81.2	98.7	97.7	230.7	264.2	251.4
Tuberculosis of respiratory syst.	70.9	87.3	88.4	201.1	236.9	229.0
Tuberculosis of the meninges, etc.	5.0	6.0	4.6	8.6	8.4	6.4
Other forms of tuberculosis	5.3	5.4	4.6	21.1	18.8	15.9
Cancer	68.7	77.1	71.4	69.3	77.3	67.8
Diabetes	15.0	16.1	17.2	15.6	17.1	14.7
Cerebral hemorrhage; apoplexy	48.1	60.3	57.0	86.8	104.8	96.2
Organic diseases of the heart	113.2	123.7	120.9	212.5	226.5	205.5
Total respiratory diseases	89.3	104.0	92.5	185.3	212.0	177.9
Bronchitis	4.8	5.5	5.6	8.2	10.3	10.1
Bronchopneumonia	33.5	41.1	30.6	58.9	68.4	45.4
Pneumonia—lobar and undefined	43.7	48.7	48.4	104.9	120.1	110.5
Other dis. of respiratory syst.	7.3	8.7	7.9	13.3	13.3	12.0
Diarrhea and enteritis	34.4	34.7	26.0	39.3	35.0	25.6
Under 2 years	29.6	29.3	20.5	29.3	24.7	17.1
2 years and over	4.8	5.5	5.4	9.9	10.3	8.5
Acute nephritis	4.5	5.3	4.8	15.6	17.6	14.7
Chronic nephritis	61.5	64.7	64.6	121.8	125.3	113.7
Total puerperal state	15.5	17.7	17.6	25.4	28.8	23.4
Puerperal septicemia	5.6	6.5	6.6	10.9	11.3	9.6
Puerperal albuminuria and convulsions	3.6	4.6	4.1	5.9	7.6	5.7
Other dis. of puerperal state	6.3	6.5	6.9	8.6	9.9	8.2
Total external causes	72.9	78.5	72.6	113.1	122.6	111.2
Suicides	7.0	8.0	8.0	4.2	5.3	5.2
Homicides	3.5	3.2	3.4	32.4	39.1	31.9
Accidental and unspecified violence	62.3	67.3	61.2	76.4	78.1	74.1
Accidental drowning	7.3	9.1	8.0	8.9	10.4	7.1
Automobile accidents	17.0	16.3	14.3	14.4	14.8	12.0
All other and ill-defined causes of death	167.9	184.0	160.2	305.3	325.7	284.4

PERIODICITY IN TYPHOID FEVER.

A systematic study of typhoid fever deathrates, undertaken primarily to examine their trend in past years, has brought to light certain periodic relations of peculiar interest. The study includes 29 American cities, and there is evidence that the periodic phenomenon is of more or less universal character, affecting in a similar way cities in widely separated parts of the United States. A more detailed and extended report on the observations of periodicity will be included in a historical study of typhoid fever to be issued in due course. Here we present just one example which shows the phenomenon in particular clarity, and one curve representing the entire group of cities in the aggregate.

The method adopted to bring out graphically the periodic phenomenon in the mortality from the disease is best explained by calling to mind what would be observed if the periodicity were perfect. In that case, if the curve representing the deathrates were plotted first in one position and then plotted a second time shifted to the right or left by exactly one period, the two plots would coincide and be indistinguishable. If the periodicity is not perfect but only approximate, the curve thus plotted in two positions will not show absolute coincidence in all respects, but will still show a certain parallelism and a tendency for crest to fall on crest and trough on trough.

This is precisely what happens in the case of the curves exhibited on page 7, which represent the deathrates from typhoid fever for a long period of years. The fully drawn curve for Providence, R. I., Fig. 1, corresponds almost perfectly, crest by crest and trough by trough, with that shown in dotted line. The dotted line is simply a repetition of the original curve, but shifted six years to the left. In the period from 1867 to 1876, the periodicity was in some way disturbed. Two vertical lines have been drawn in the diagram to separate off this period from the rest of the graph. The periodic character of the curve becomes particularly apparent to the eye if this space between the vertical lines is covered with a blank piece of paper.

The composite curve, Fig. 2, for 29 cities* is of particular interest. When shifted eight years upon itself, it shows remarkable agreement with the curve in its original position. In the whole series of 62 years there are only two crests—at 1889 and at 1900—which do

*Of these 29 cities, only four have records over the full 62 year period, 1859 to 1920. In the composite curve each city is included to the full extent of available records, which vary from 62 to 25 years.

not exhibit this concordance. The curve thus seems to show, as was indicated above, that the periodicity is not a merely local phenomenon but is a general characteristic over a widely scattered area of the United States, and that the rise and fall of the deathrates occurred over the entire territory in approximate synchronism. For otherwise, in the composite curve, crests and troughs from different cities would presumably combine at random, and hence would tend to cancel each other, leaving no regular periodicity in evidence.

It is natural to compare also the figures for Providence alone with that for the 29 cities combined. In Fig. 3 the composite curve and that for Providence are shown in juxtaposition.

In explanation of the graphs it should be mentioned that a moving two-year average was computed and used instead of the direct deathrates, in order to secure slight smoothing of the curve, and that these deathrates so averaged were expressed in per cent. of an eight year moving average, in order to eliminate the secular trend, which, for purposes of this comparison, is merely a distracting feature. The eight year moving average was chosen because preliminary inspection seemed to indicate a period of about this length. The results bore out this expedient, inasmuch as the composite period was found to be eight years.

As to the trend which has been eliminated, our readers know from previous issues of the *Bulletin* that the typhoid fever deathrate has been descending steeply in past years. The waves above and below the mean level (100) of the curves here shown represent movements above and below the general trend, which is itself a descending curve.

The recurrence of typhoid maxima at regular intervals, which has here been laid bare, raises the question as to what may be the cause underlying the phenomenon. Similar effects have been observed in the case of other infectious diseases, and it is as yet an unsolved problem whether these periodicities are to be ascribed to some climatic influence—it is well known that weather is subject to cyclic variations—or to properties of the disease organism, or of the host population. There is here an interesting field open for further research.

TYPHOID FEVER CYCLES

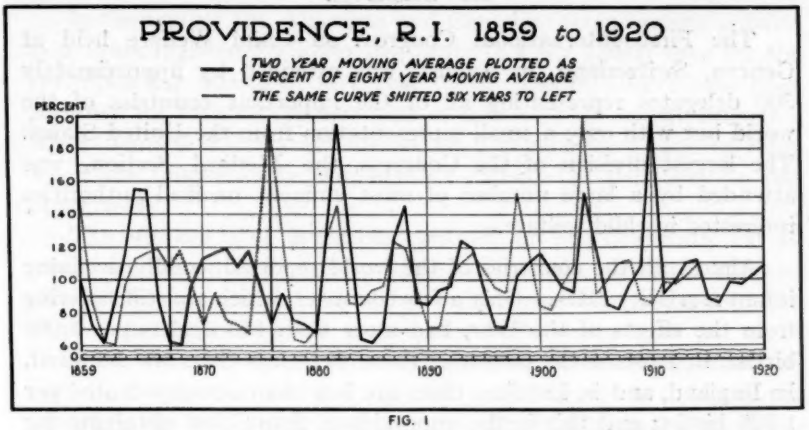

FIG. 1

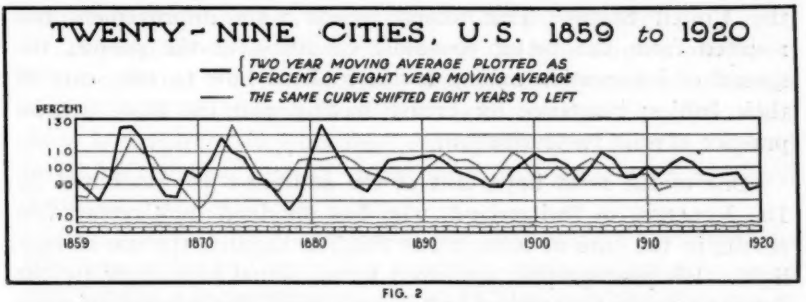

FIG. 2

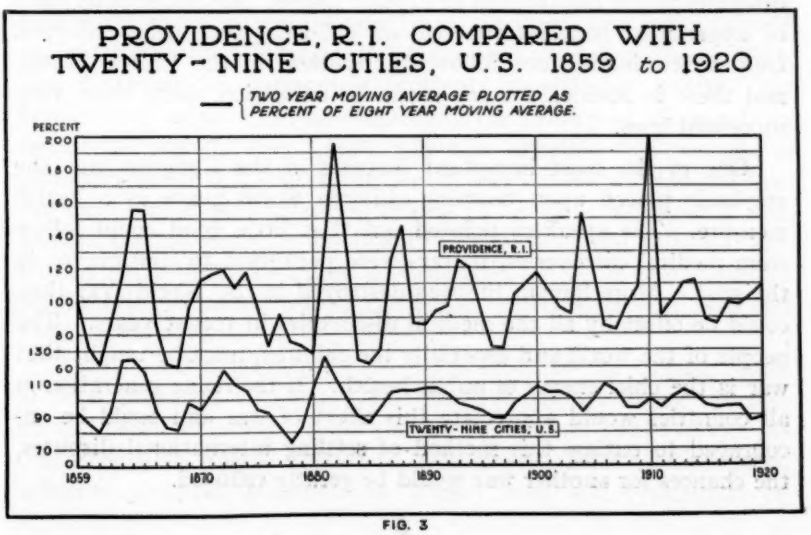

FIG. 3

THE INTERNATIONAL CONGRESS ON CHILD WELFARE, AT GENEVA.

The First International Congress on Child Welfare held at Geneva, Switzerland, in August, was attended by approximately 300 delegates representing all of the important countries of the world but with only a small representation from the United States. The largest division of the Congress, the Medical Section, was attended by a large number of most eminent medical authorities interested in child welfare.

Almost all the countries of the world reported rapidly declining infant mortality rates. Only a few countries, which are still suffering from the effects of the War, had more than 150 deaths per 1,000 births; in most of the countries there were less than one hundred. In England, and in London, there are less than seventy deaths per 1,000 births; and this is the approximate figure now obtaining for the United States. This almost world wide improvement has resulted from the better economic condition of the people, the spread of information among mothers about how to take care of their babies; insistence on breast feeding and the more general practice of milk pasteurization.

One of the most important of the addresses was presented by Dr. ROLLIER, of Switzerland, who has obtained such remarkable results in the cure of tuberculous children through the use of sunlight. His photographs, confirmed by an actual visit made by the delegates to the Sanatorium at Leysin, showed that miraculous cures of apparently hopeless tuberculous children were being effected. Only a few institutions follow this method in the United States, and there is obviously much room for expansion along these very successful lines.

One of the most important features of the Congress was the emphasis placed upon teaching children world peace as a health measure. The speakers pointed out that little good could follow from medical discoveries, if wars were permitted to continue as in the past. More human life was destroyed in the World War than could be offset by all the medical discoveries in recent years. The people of the world and especially the children, must be taught that war is the chief enemy of public health. If the rising generation in all countries would appreciate this effect of war and could be encouraged to outlaw this method of settling international disputes, the chances for another war would be greatly reduced.

HEALTH RECORD FOR SEPTEMBER, 1925.

In September the American and Canadian wage-earning population again registered a lower deathrate (8.4 per 1,000) than for the corresponding month of last year (8.5). Declines have now been recorded for each of the first nine months of 1925 except August—when identical deathrates were recorded in each year—and in June, when the unseasonably hot weather caused the mortality to rise appreciably.

The marked and favorable contrast in the deathrate for all causes combined extended to almost all of the principal diseases shown on page eleven. In the few instances where increases are shown the deathrates are so low, for both years, that the slight rises are without significance. The one considerable increase recorded, that for diarrhea and enteritis, is due largely to the increased coverage, in 1925, of infants, among whom diarrheal complaints cause a higher deathrate than at any other period of life.

Typhoid fever, for the sixth time in the nine elapsed months of 1925, registered a higher deathrate than for the corresponding month of 1924. All of the typhoid rates for both years are low; but unless there is a marked improvement during the final quarter, typhoid fever for the first time in many years will register an increased deathrate over the previous year.

The mortality record for deaths due to violence is very unfavorable, except for suicides. The homicide deathrate again exceeded that for the corresponding month of 1924 as has been the case in each of the first nine months save two. Accidents as a group showed an increase in the deathrate of 7.3 per cent. over September, 1924. The deathrate for automobile accidents was 20 per 100,000, the highest ever recorded in any month in the history of Metropolitan Industrial policyholders. How bad this situation has become, is indicated by the fact that in the September *Bulletin* we reported that the sixty-nine deaths occurring during the week ended August 10th marked the maximum in the history of the Industrial policyholders. During September this figure was exceeded twice, 76 deaths and 72 deaths being recorded during the weeks ended September 14th and 28th respectively.

The general deathrate for the large cities of the United States in September was 10.9 per 1,000, which is slightly above the rate for the previous month (10.8) and for September, 1924 (10.7). As compared with August there was greater prevalence of diphtheria, influenza, malaria, poliomyelitis, scarlet fever and typhoid fever,

with fewer cases of measles, smallpox and whooping cough. Compared with September, 1924, there was more influenza, poliomyelitis, typhoid fever and whooping cough, but less diphtheria, malaria, measles, scarlet fever and smallpox.

The largest increases in diphtheria cases were reported from Alabama where the number rose from 36 in August to 108 in September, and from North Carolina, with an increase from 145 to 306 cases.

Scarlet fever was especially prevalent in Illinois and North Carolina. In the former 236 cases were reported for the first three weeks of September as compared with 195 for the corresponding weeks in August. In North Carolina cases increased from 49 to 109 for the same weeks.

Smallpox was much less prevalent than in August.

Poliomyelitis increased in a number of states, particularly in Minnesota, where the number of case reports rose from 158 for the first three weeks of August to 203 for the corresponding period of September.

There was a considerable rise, largely seasonal, in case reports of typhoid fever. The largest increases were reported from Illinois and Maryland. There were more or less serious outbreaks of typhoid in at least ten different localities in West Virginia causing a number of deaths. In Sandusky, Ohio, the Health Department is seeking to find the source of typhoid fever which for nearly a month has been prevalent in that city. The Rhode Island State Board of Health is investigating an unusually large number of cases in West Warwick. In an outbreak at Chattanooga, Tennessee thirty-five cases had been reported up to September 10th, fifteen of which were in one ward of the city.

At least 15,000 children in the first and second grades of the public schools in Baltimore were to be immunized against diphtheria within the first three weeks of the school year. At Windsor, Ontario, the Board of Health and Board of Education are cooperating in a campaign against diphtheria and plan to begin toxin-antitoxin inoculations of all susceptible school children. This will be administered free of charge in case of inability to pay, but no child will be inoculated without the consent of the parents or guardian.

The following table shows the mortality among the Industrial policyholders for September, 1925, August, 1925, September, 1924 and the year 1924.

METROPOLITAN LIFE INSURANCE COMPANY.

Deathrates* per 100,000 for Principal Causes, Premium-paying Business in Industrial Department. (Annual Basis.)

MONTHS OF AUGUST, 1925; SEPTEMBER, 1925, AND OF SEPTEMBER, 1924.

CAUSES OF DEATH	RATE PER 100,000 LIVES EXPOSED*			
	Sept. 1925	Aug., 1925	Sept. 1924	Year 1924
TOTAL—ALL CAUSES	841.6	747.2	852.6	905 2
Typhoid fever	8.6	6.9	8.2	4 4
Measles	.9	1.4	.6	7.2
Scarlet fever	.9	1.8	1.2	4.4
Whooping cough	9.1	8.6	8.6	7.4
Diphtheria	7.5	5.1	7.5	13 1
Influenza	5.4	3.8	3.7	16.0
Tuberculosis (all forms)	86.9	81.6	90.9	104.2
Tuberculosis of resp'y system	75.3	70.3	79.9	92.3
Cancer	68.6	62.6	74.4	70.2
Diabetes mellitus	13.1	11.1	14.5	14 8
Cerebral hemorrhage	46.1	42.3	53.1	60.1
Organic diseases of heart	100.4	94.6	111.3	123.4
Pneumonia (all forms)	39.2	32.8	38.5	88.6
Other respiratory diseases	10.0	9.4	9.9	13.8
Diarrhea and enteritis	87.5	60.2	73.3	32.2
Bright's disease (chronic nephritis)	60.5	56.0	60.7	65.3
Puerperal state	14.3	13.9	15.1	16.8
Suicides	7.4	5.1	8.1	7.2
Homicides	8.0	6.6	7.3	7.1
Other external causes (excluding suicides and homicides)	69.3	69.7	64.6	62.5
Traumatism by automobiles	20.0	18.4	19.2	15.7
All other causes	197.9	173.6	201.1	186.5

*All figures include infants insured under one year of age.

Correspondence on the subjects discussed in these BULLETINS, may be addressed to: The Editor.

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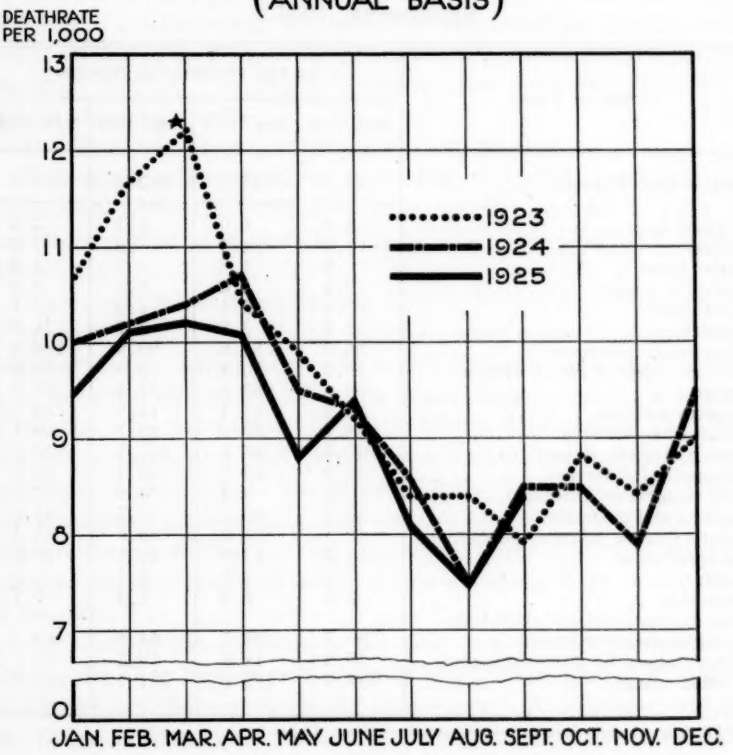
DEATHRATE PER 1000 *in* SPECIFIED MONTHS *of* 1923, 1924, 1925

METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT

(ANNUAL BASIS)



	1923	1924	1925		1923	1924	1925
JAN.	10.7	10.0	9.5	JULY	8.4	8.6	8.1
FEB.	11.7	10.2	10.1	AUG.	8.4	7.5	7.5
MAR.	12.2	10.4	10.2	SEPT.	7.9	8.5	8.4
APR.	10.4	10.7	10.1	OCT.	8.6	8.5	
MAY	9.9	9.5	8.8	NOV.	8.4	7.9	
JUNE	9.2	9.3	9.4	DEC.	9.0	9.5	

★ *Beginning with March, 1923, figures include mortality of infants under one year of age.*

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